# Letters

## Congressional Research Support of Indirect Costs

L. K. Pettit ("Congress, confusion, and indirect costs," 21 Mar., p. 1301) states that a letter from me constituted the most proximate stimulus for the introduction by Senator Mansfield of an amendment to the FY 69 Appropriations Act for the Department of Defense to limit payments for indirect costs on federal research grants and contracts. The discussion of this matter in the *Congressional Record* (3 Oct. 1968) was confusing indeed. But it is entirely evident that, at most, our correspondence was only peripherally germane.

As Pettit noted, my letter supported rather than deplored the overall manner in which federal funds for research have been utilized. The actual components of the six categories of expenditure noted in the table which he reproduced were explained in considerable detail; careful reading would not permit their interpretation as indicating payments for "indirect costs" equal to 75 percent of total expenditures. Accordingly, I was surprsied to find that letter used as a preamble to an attack on the propriety and magnitude of indirect cost payments. When, subsequently, I protested to Senator Mansfield that "the thrust of my letter was precisely in the opposite direction," he replied, on 15 Oct., that "I specifically stated on the floor what your recommendation was, that you had specifically rejected this approach (a statutory limitation on indirect cost payments) but that I had specifically rejected your recommendation."

Indirect costs are real indeed and they must be met, else the university must founder. Nor should this be accomplished at the expense of other functions of the university. However, perpetual discussions of the "indirect costs problem" needlessly confuse and conceal the underlying, important questions such as: How should American society support its colleges and universities? What should be the nature of the partnership between the federal government and the universities with respect to graduate education and research? By what mechanisms should funds be transferred from the federal government to the universities, their faculties, and students, in support of that single enterprise which is research, graduate, and postdoctoral education? Is the university an appropriate setting for important research conducted by nonteaching staff, if such there be? To what extent is research itself the business of the university?

Withal, it remains true that federal funds appropriated in the name of research by the Congress do contribute substantially to the essential functioning of the university, by construction of physical plant, defraying faculty salaries, paying at least partial costs—as "indirect costs"—for operations without which the university could not function in any case, supporting the research which constitutes the leading edge of the intellectual endeavor and personally subsidizing a large fraction of all graduate students. Are not the universities better qualified for their role in society because their faculties have been significantly expanded but with lighter individual teaching responsibilities? Pettit obfuscated when he chose to ignore the variety of insights into the federal-university relationship afforded by the fact that, of $1.67 billion in federal funds in support of research at the universities in FY 67, only one-quarter was utilized for the usual purposes of the classical research grant-in-aid: equipment, supplies, travel, publications, and salaries of those employed solely for the purposes of the research project; that is, technicians and postdoctoral fellows. There may well be justice in the complaint that the funds provided pay less than full cost. This can be established by appropriate accounting procedures and should be rectified where it occurs. But the universities' case is weakened by deprecating the enormous contribution of research support to the total academic endeavor while proclaiming their inability to meet the deficits thus incurred.

Pettit complains that "The basic problem with the Handler letter is that it neglected the very important task of explaining to the Senate just what indirect costs are." But I had not been asked to do so. My letter specifically replied to an inquiry from Senator Mansfield which made no mention of "indirect costs" but posed the two questions cited by Pettit. However, Pettit might have noted my passing references to indirect costs: ". . . support of the total apparatus of the university and consist very largely of salary payments to the wide diversity of personnel—from janitors to secretaries, purchasing agents and deans—all of whom are necessary to the overall functioning of the university and whose numbers and importance have been markedly increased by the scale of the academic research endeavor." And, later, "If the other funds were not appropriately expended, it would be impossible to utilize the $426 million of immediate research costs in an intelligent and useful fashion." I find it ironic that, in a five-page article addressed specifically to this subject, Pettit also neglected to explain "just what indirect costs are."

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## Czechoslovakia: Extend a Hand

One can only agree that Western scientists have a certain responsibility toward their colleagues in Czechoslovakia (Letters, 10 Jan.). However, the nature of this responsibility is open to question. Contrary to Hymen's suggestion, there is little likelihood that science in Czechoslovakia will wither away, or that there will be restraints put upon free investigation of scientific problems. I worked for a year in the Institute of Physiology in Prague, was present during the invasion, and revisited Prague some weeks after it, and I can attest that scientific work has not been hindered, nor has the active political interest that Czech scientists take in their country's affairs abated. What is more likely is that Czech science will suffer through well-intentioned but misdirected efforts by Western scientists. A letter from the AAAS to the Academy of Sciences in Moscow might make us feel a lot better, but it could provide evi-

← Circle No. 18 on Readers' Service Card on page 742A

dence to the Russians that Western "imperialists" are meddling in the affairs of a sister socialist country.

Direct aid, on an individual basis, is likely to be of much greater significance than nice-sounding words on paper. From Munich, Cierna, and Bratislava the Czechs have learned that words are cheap, and that, when the moment of truth arrives, they can count only on themselves. There are numerous small ways that individual scientists can aid their Czech colleagues. For instance, shortly after the events of August, the Academy of Sciences in Prague adopted as official policy a determination to continue all exchange programs with Western scientists. Support of these programs would be a tangible way of helping. Also, those who wish to help most can do so by expanding their contacts with Czech scientists, by going to Czechoslovakia to work if the possibility arises, and by seeking to increase the number of scientific positions available to Socialist-bloc scientists in the West. There is no evidence that a large-scale defection of scientists has occurred or is likely. Each of us, in his own way, can work to expand communication between West and East, not with empty platitudes, but with actions that indicate our support for Czechoslovakia.

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## A Parable?

Many Kansas coyote hunters have mechanized their "sport" by equipping trucks (and in some cases airplanes) with two-way radios to keep in touch with ground crews. When a coyote is spotted, expensive dog packs carried in cages in the trucks may be released by opening the doors from inside the cab. Though such fancy "kill" equipment has been in use for some time, it is only recently that coyotes have been reported to be bigger, harder to bring down, more numerous, and even smarter. Formerly, most coyotes were killed when groups of men and boys would surround a section and start walking toward the middle. Many sections did not get hunted and it is possible that many animals lived their entire life cycle within a limited territory.

Now the trucks may "jump" a coyote, chase him for miles, and finally release the dogs to chase and kill. Admittedly, coyotes that escape to produce offspring would tend to be more vigorous. But in addition, if they survive the chase, driving these animals into a new territory would promote outcrossing and a restoration of vigor for both litter and individual size. These vigorous individuals would be harder to bring down and may even be smarter than their recent ancestors.

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## "D" People and "S" People

Boffey's review of the work of Donald F. Hornig as science adviser to President Johnson (31 Jan., p. 453) states that a "communications gap" was peculiar to those two individuals. What the scientific and engineering world, on the one hand, and the managerial and administrative world, on the other, should both realize is that this communications gap is broadly characteristic of these two mental types.

Some 20 years ago John Mills discussed a basic difference in their approaches to a problem (*1*). The managerial (or action) people base their primary analysis on "differences" (or changes in the situation) and the scientific (or thinking) people form their judgment on the "similarities" they find in comparing situations or objects. Another characteristic is that the managerial person wants (or writes) a report with first a recommendation for action, followed by the technical conclusions on which the recommendation is based, and ending with a description of the process by which the technical data was obtained. The scientist, on the other hand, usually will begin by stating the origin of the problem, its history, the various possible attacks, the test procedures decided on, then the data in charts and tables, the technical conclusions, and finally, a recommendation.

J. P. Maxfield states that as civilian director of scientific work at the Navy electronics laboratory at Point Loma (Calif.), he increased the effective flow of information by telling his technical people, "Take the last page of your report and put it first" (*2*). He is also responsible, I think, for these two striking statements: "The difference people know only two degrees of probability, zero and one, and the similarity people recognize every degree of probability except zero and one," and "The 'D' people tend to act before they think, if they ever think; and the 'S' people think before they act, if they ever act."

These two mental classes have been occasionally recognized over the centuries. Pascal identified two types of men: the intuitive and the mathematical. About 1620 Sir Francis Bacon wrote, "There is one principal and as it were, radical distinction between different minds, in respect of philosophy and the sciences; which is this: that some minds are stronger and apter to mark the differences of things, others to mark their resemblances" (*3*).

In the absence of a basic explanation for these observations, a simple appreciation of them by both scientists and our public officials would promote efficient progress in a balanced program of research, technology, and use.

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**References**

1. J. Mills, *The Engineer in Society* (Van Nostrand, New York, 1946), p. 3.
2. J. P. Maxfield, personal communication.
3. C. P. Curtis and F. Greenslet, Eds., *The Practical Cogitator* (Houghton Mifflin, Boston, Mass., 1945), p. 18.

## Fallacy of Undescribed Species

My experience as an adopted plant taxonomist has taught me that only a small proportion of the "new descriptions" which "accumulate" in botany are really of hitherto unknown species (taking a not-too-narrow view of that all-too-elusive taxon). Consequently, it would be surprising if their rate of accumulation for the animal world could give a sound indication that the "two million animal species" which have so far been described "are only about 50 percent of the extant species on earth" (R. J. Riedl, "Gnathostomulida from America," 31 Jan., p. 445). Indeed, I would expect that the number of "new species" described in the sister science would bear a far closer relationship, even in these relatively advanced days, to the number of describers and to their views of specific limits than to the numbers of genuinely undescribed taxa.

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Circle No. 45 on Readers' Service Card on page 742A ⟶